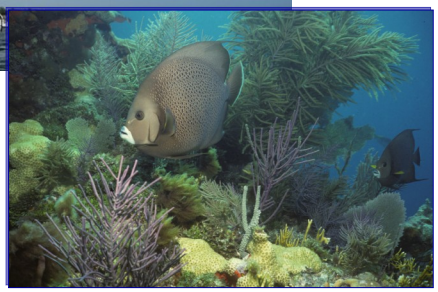
INTEGRATED MARINE PROTECTED AREA CLIMATE TOOLS

Climate-based decision support for resource managers, scientists, and stakeholders

Entrusted with stewardship of many of the most ecologically, economically and socially important marine resources in the U.S., managers of Federal marine protected areas (MPA), such as the NOAA National Marine Sanctuaries, need reliable, timely information to actively engage stakeholders and the public about the threats posed by climate variability and change. Most managers, however, do not possess sufficient background in atmospheric science to quickly access, interpret and apply often complex climate information to their planning and decision making processes.

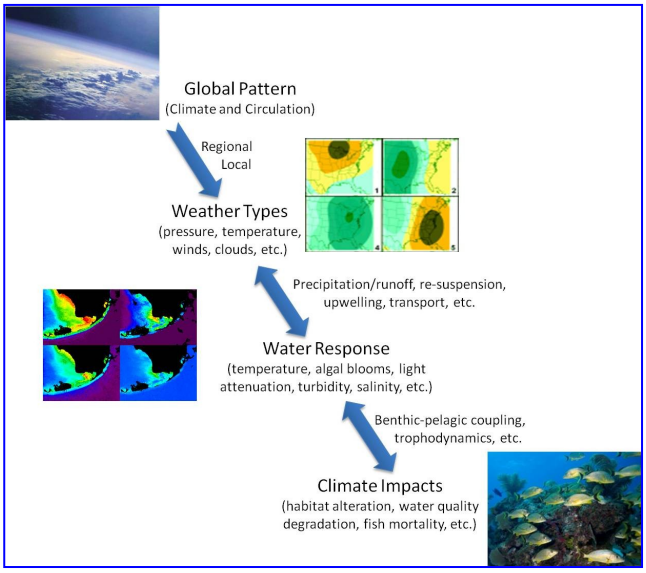


WHAT IS IMPACT:

Integrated MPA Climate Tools (IMPACT) is a NOAA-wide partnership project that utilizes existing NOAA core capabilities to develop and deliver critical climate-ecosystem tools for informed MPA decision making, climate adaptation and preparedness, and environmental scenarios and forecasts. Tools will be based on scaled, integrated climatologies that help managers, scientists, and the public build and understand ecological response scenarios, as well as inform assessments of climate impacts, fully integrating existing coastal monitoring and observational networks in near-real time.

What are the tools?

- Climatologies (historical events, averages, extremes, trends) of environmental and ecological elements, integrated at the scale of an MPA.
- Conceptual and probabilistic models to build climate - ecosystem response scenarios for MPA managers at the regional, state and local level.
- MPA assessment reports on climate scenarios and system response, including eco-climate forecasts that describe the interactions between weather/climate and changes in water quality, habitats, and resources.



WHY IMPACT IS NEEDED:

Managers need concise, interpretable climate information for decision making. Most documented coastal/marine climate impacts result from changes in environmental factors such as temperature, sea level, precipitation, chemistry, and circulation. Developing and delivering easily interpretable information on such changes and how they drive ecosystem impacts is a critical component to designing and implementing effective climate change adaptation and mitigation strategies.

IMPACT answers questions such as:

- *How quickly and how much is climate changing across and within an MPA?*
- *Is an entire MPA being affected equally by change?*
- *What climate elements are the most important drivers of ecological impacts?*

IMPACT addresses NOAA's Climate Adaptation and Mitigation, Resilient Coastal Communities and Economies, and Healthy Oceans strategic goals by providing integrated assessments of the climate system, identifying and understanding climate impacts on marine and coastal ecosystems, informing decisions and management at many levels, improving climate literacy, and providing sustained, reliable, and timely climate services to foster resilient ecosystems and associated communities.

WHERE CAN IMPACT BE USED:

IMPACT is being developed as a pilot project in South Florida (Florida Keys National Marine Sanctuary, Everglades, etc), but is being designed for application to the management and decision-support of any MPA.

WHO WILL BENEFIT FROM IMPACT:

- National and regional planners who must identify and reconcile gaps in current climate/ecosystem monitoring and enhance assessment efforts.
- MPA managers who must incorporate climate change into long-range management plans, or who must be able to quickly translate climate information into ecosystem impact stress mitigation efforts.
- Scientists who need to identify and/or better quantify the relationships between climate and ecosystem at various scales.
- Stakeholders and the public who may gain more resilient ecosystems, and who will become better informed about climate impacts.

MORE INFORMATION ON IMPACT:

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